

II. Remarks In Response to the Office Action

A. General Remarks

Claims 6 and 44-75 were pending in the application prior to this Reply. Claims 52-75 have been cancelled. New claims 76-95 have been added. Therefore, claim 6, 44-51, and 76-95 are pending in the application.

In responding to the Examiner's prior art rejections, Assignee only justifies the patentability of the independent claims (*i.e.*, claims 6, 76, 82, and 89). As the Examiner will appreciate, should the independent claim be patentable over the prior art, narrower dependent claims would also necessarily be patentable. Accordingly, Assignee does not separately discuss the patentability of the dependent claims, although Assignee reserves the right to do so at a later time if necessary.

B. Claim Rejections - 35 USC § 102

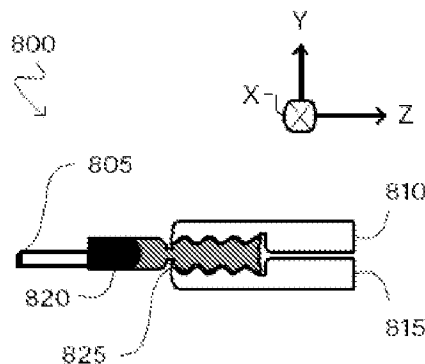
Claims 6 and 44-75 stand rejected under 35 U.S.C. 102(e) as being allegedly anticipated by Herbst (US 6,435,904). Claims 52-75 have been cancelled, rendering this rejection moot.

Assignee respectfully traverses the contention that Herbst anticipates claims 6 and 44-51 insofar as Herbst fails to teach or suggest each claimed element in independent claim 6, as amended.

Independent claim 6, as amended, calls for a connection mechanism that couples a first connector head to second and third connector heads and that limits the motion of the connector heads in substantially orthogonal planes to an axis of the first connector head. Although claim 6 before amendment implicitly called for the second and third connector heads to be moveable in these planes, Assignee has amended claim 6 to explicitly recite that "the connection mechanism is adapted to permit limited motion of the second connector head in first and second planes relative to the first connector head, the first plane being substantially coincident with the axis, the second plane being substantially orthogonal to the axis" and "adapted to permit limited motion of the third connector head in the first and second planes relative to the first connector head." Furthermore, claim 6 calls for the second and third connector heads to be adapted to move

independent of each other in one of the planes and adapted to move together in the other of the planes.

By way of example and without limitation, FIG. 8A of Assignee's specification illustrate *an example of one embodiment* of the claimed elements of claim 6. Assignee believes it will be beneficial to discuss the claimed elements in view of the embodiment of FIG. 8A to help the Examiner in his analysis.



Embodiment of FIG. 8A

As called for in claim 6, the connector (800) includes a first connector head (805) having an axis (X). A connection mechanism couples the first connector head (805) and a second connector head (810). The connection mechanism is adapted to permit limited motion of the second connector head (810) in first and second planes relative to the first connector head (810), where the first plane (X-Z plane) is substantially coincident with the axis (X) and the second plane (Y-Z plane) is substantially orthogonal to the axis (X). A third connector head (815) is coupled to the connection mechanism. The connection mechanism is adapted to permit limited motion of the third connector head (815) in the first plane (X-Z plane) and the second plane (Y-Z plane). The second and third connector heads (810, 815) are adapted to move independent of each other in one of the planes (*e.g.*, X-Z plane). The second and third connector heads (810,

815) are adapted to move together in the other plane (*e.g.*, Y-Z plane). It is understood that the scope of claim 6 is not limited by this example.

In contrast, Herbst discloses a multiple peripheral connection device (10) having an upstream port (18; Fig. 2) for connecting to a host device (14; Fig. 2) and having downstream ports (20; Fig. 2) each for connecting to a peripheral device (12; Fig. 2). Herbst at col. 2, lines 12-16 and 33-41. A plug receptacle (56; Fig. 3) fixedly mounted to a circuit board (34; Fig. 3) provides the upstream port (18; Fig. 2). Herbst at col. 3, lines 57-59. Port orienting structures (28; Fig. 1) seat plug receptacles (46; Fig. 3), which provide the downstream ports (20; Fig. 2) of the device (10). *Id.* at col. 3, lines 8-9, and col. 4, lines 9-10. “[T]he port orienting structures 38 [*sic*] can be individually moved relative to one another. Specifically, the orienting structures 28 can be individually pivoted relative to one another about a common axis.” *Id.* at col. 3, lines 50-55.

Thus, Herbst discloses a fixed upstream port (18; Fig. 2) and a plurality of downstream ports (20; Fig. 2) that are moveable relative to one another about one axis only. An illustration from Herbst will be helpful so Assignee reproduces FIG. 1 of Herbst with additional notations added.

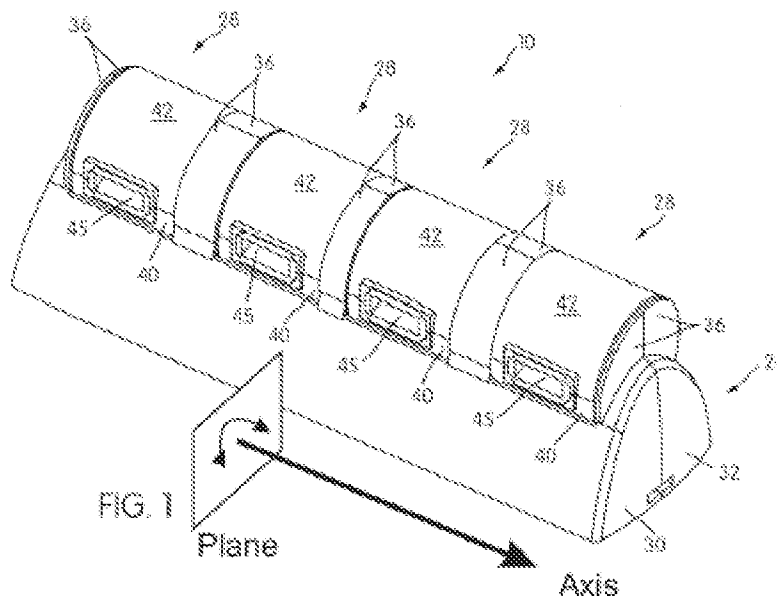


FIG. 1 from Herbst with Added Notations

As discussed previously, Herbst discloses an upstream port (18; Fig. 2) that is disclosed as being fixed to a circuit board and positioned in an opening (54; Fig. 2) in housing half (32; Fig. 1). Thus, this fixed upstream port (18; Fig. 2) lies on the other side of the device (10) as shown in Fig. 1 above. As shown in the above-illustration, each of the port orienting structures (28) can only be individually pivoted relative to one another in one plane about a common axis. Accordingly, Herbst fails here to teach or suggest each claimed element of claim 6 — *e.g.*, that the second and third connector heads are permitted limited motion in first and second substantially orthogonal planes, are adapted to move independent of each other in one of the planes, and are adapted to move together in the other plane.

Elsewhere, Herbst discloses that “the port orienting structures 28 could be provided by ball and socket-type structures that allow greater flexibility of movement. Additionally, one or more of the port orienting structures 28 may be provided with multiple downstream ports 18 [sic], instead of one as shown. Also, the upstream port 18 may also be provided on one of the port orienting structures 28 so as to enable its orientation to also be adjusted.” Herbst at col. 4, lines 35-44. First, providing the port orienting structures (28) with ball and socket-type structures does not teach or suggest the claimed elements of second and third connector heads permitted limited motion in first and second substantially orthogonal planes relative to a first connector head called for in Assignee’s claim 6. Second, such ball and socket-type structures for the port orienting structures (28; Figs. 1 & 3) does not teach or suggest that second and third connector heads are moveable independently in one plane and moveable together in another plane, as called for by Assignee’s claim 6. Furthermore, providing one or more downstream ports (20; Fig. 2) on the port orienting structures (28; Figs. 1 & 3) and providing the upstream port (18; Fig. 2) on one of the port orienting structures (28) do not teach or suggest the previously discussed claimed elements.

Thus, in contrast to Assignee’s claim 6, Herbst fails to teach or suggest a connection mechanism adapted to permit limited motion of one connector head in first and second planes relative to a first connector and adapted to permit limited motion of another connector head in first and second planes relative to the first connector, wherein the first plane is substantially

coincident with the axis of the first connector and the second plane is substantially orthogonal to the axis of the first connector.

For at least these reasons, Herbst does not teach or suggest each claimed element of independent claim 6 and cannot anticipate claim 6. Accordingly, claim 6 and those claims 44-51 depending therefrom are believed to be allowable, and Assignee respectfully requests allowance of claims 6 and 44-51 in the next paper from the Office.

C. New Claims Not Anticipated By Nor Rendered Obvious Over Herbst and Other Art of Record

New claims 76-95 have been added and are fully supported by the originally filed disclosure at least by paragraphs [0020]-[0028], FIGS. 2A-2B, 3B, 4A-8B, and 12, and the originally filed claims. New claims 76-95 are believed to be allowable for at least the following reasons:

1. New Claims

Independent claims 76, 82, and 89 are each directed to a connector. By way of example and without limitation, FIGS. 8A-8B of Assignee's specification illustrate *one example of one embodiment* of the claimed elements of claim 76. Assignee believes it will be beneficial to discuss the claimed elements in view of the embodiment of FIGS. 8A-8B to help the Examiner in his analysis.

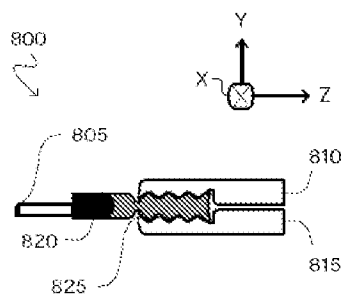


FIG. 8A
(SIDE VIEW)

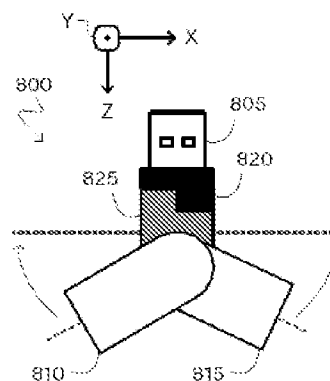
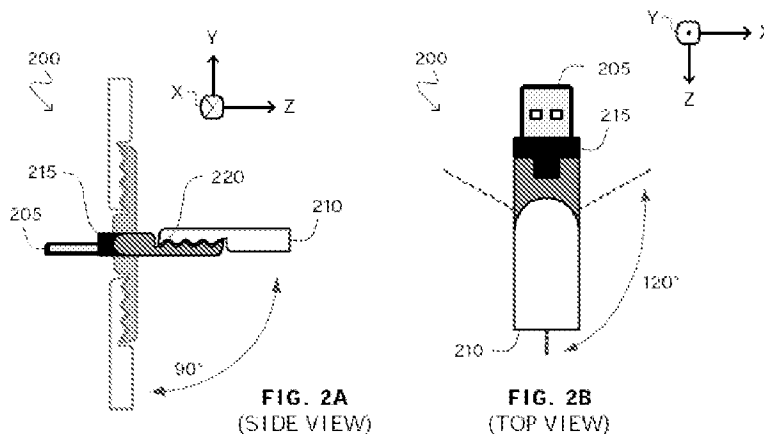


FIG. 8B
(TOP VIEW)

As called for in claim 76, the connector (800) includes an intermediate portion that defines a first axis of rotation (X-axis) and defines a second axis of rotation (Y-axis) being substantially orthogonal to the first axis (X-axis). A first connector head (805) is coupled to the intermediate portion and is rotatable in a first plane (Y-Z plane) about the first axis of rotation (X-axis). A second connector head (810) in electrical communication with the first connector head (805) is coupled to the intermediate portion and is rotatable in a second plane (X-Z plane) about the second axis of rotation (Y-axis). A third connector head (815) in electrical communication with the first connector head is coupled to the intermediate portion and is rotatable in the second plane (X-Z plane) about the second axis of rotation (Y-axis). The first and second axes of rotation (X and Y-axes) permit the second and third connector heads (810 & 815) to be selectively positioned in the first and second planes (Y-Z and X-Z planes) relative to the first connector head (805). The second and third connector heads (810 & 815) are rotatable in the second plane (X-Z plane) independent of each other.

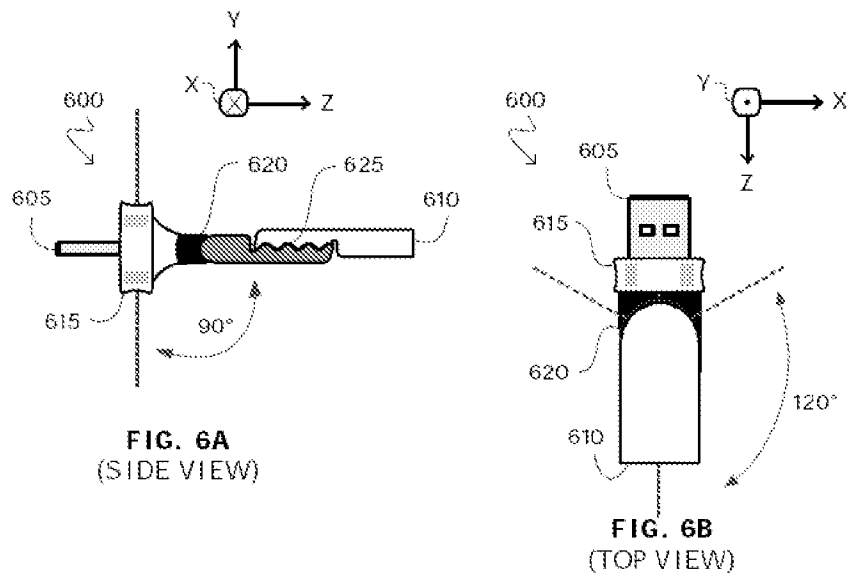
By way of example and without limitation, FIGS. 2A-2B of Assignee's specification illustrate *one example of one embodiment* of the claimed elements of claims 82 and 89. Assignee believes it will be beneficial to discuss the claimed elements in view of the embodiment of FIGS. 2A-2B to help the Examiner in his analysis.



As called for in claim 82, the connector (200) includes an intermediate portion that has a first hinged connection (215) and a second hinged connection (220). The first hinged connection

(215) defines a first axis of rotation (X-axis), and the second hinged connection (220) defines a second axis of rotation (Y-axis) being substantially orthogonal to the first axis (X-axis). A first connector head (205) is coupled to the first hinged connection (215) and is rotatable in a first plane (Y-Z plane) about the first axis of rotation (X-axis). A second connector head (210) in electrical communication with the first connector head (205) is coupled to the second hinged connection (220) and is rotatable in a second plane (X-Z plane) about the second axis of rotation (Y-axis). The first and second axes of rotation (X and Y-axes) permit the second connector head (210) to be selectively positioned in the first and second planes (Y-Z and X-Z planes) relative to the first connector head (205).

By way of example and without limitation, FIGS. 6A-6B of Assignee's specification illustrate *one example of one embodiment* of the claimed elements of claim 89. Assignee believes it will be beneficial to discuss the claimed elements in view of the embodiment of FIGS. 5A-5B to help the Examiner in his analysis.



As called for in claim 89, the connector (600) has a first connector head (605) defining a first axis of rotation (Z-axis). An intermediate portion is coupled to the first connector head (605) and is rotatable in a first plane (X-Y plane) about the first axis of rotation (Z-axis). The intermediate portion defines a second axis of rotation (X-axis) substantially orthogonal to the

first axis of rotation (Z-axis) and defines a third axis of rotation (Y-axis) substantially orthogonal to both the first and second axes of rotation (X and Z-axes). The second and third axes of rotation (X-axis & Y-axis) are rotatable together in the first plane about the first axis of rotation (Z-axis), and the third axis of rotation (Y-axis) is rotatable in a second plane (Y-Z plane) about the second axis (X-axis). A second connector head (610) in electrical communication with the first connection head is coupled to the intermediate portion and is rotatable in a third plane (X-Z plane) about the third axis of rotation (Y-axis). The first, second, and third axes of rotation (X, Y, and Z-axis) permit the second connector head (610) to be selectively positioned relative to the first connector head (605) in the first, second, and third planes (X-Y, X-Z, and Y-Z planes).

2. Analysis with Respect to Art of Record

During examination of this application, the Examiner has cited the following references: Herbst (US 6,435,904); Reichle (U.S. Patent No. 6,116,958); Bargellini (UK Patent Application 2170064A); Hiroshi (JP06111903A); Stout (US 6,394,813), and Hefner (US 5,186,659). New claims 76-95 are allowable over these references insofar as none of these references (taken alone or in combination) teach or suggest each claimed element.

a. Herbst

As noted previously in Section B, *Herbst discloses port orienting structures (28) that can be individually pivoted relative to one another about a common axis*. Herbst at col. 3, lines 50-55; Figs. 1-3. *Herbst elsewhere discloses, but does not show, that “the port orienting structures 28 could be provided by ball and socket-type structures* that allow greater flexibility of movement.” Herbst at col. 4, lines 35-44. However, because Herbst discloses a single axis of rotation (FIG. 1) or a ball-socket arrangement, Herbst fails to teach or suggest the first and second axes of rotation and planes called for in claim 76 and fails to teach or suggest an intermediate portion having first and second ends with hinged connections that define substantially orthogonal axes of rotation for first and second connector heads, as called for in claim 82. Finally, because Herbst discloses a single axis of rotation (FIG. 1) or a ball-socket arrangement, Herbst fails to teach or suggest the three orthogonal axes of rotation and their interdependence called for in claim 89.

b. Reichle

Reichle discloses a connector having a single degree-of-freedom. In particular, Reichle discloses an adapter having a plug part (1) and socket part (2) connected by an articulated joint (3). The articulated joint (3) swivels the plug part (1) and socket part (2) along one swivel plane. See Reichle at Abstract; col. 3, ll. 14-18; and Figs. 2, 7, and 8. Because Reichle discloses only a single degree-of-freedom, Reichle at least fails to teach or suggest the first and second orthogonal axis of rotation and planes called for in claims 76, 82, and the three orthogonal axes of rotation in claim 89.

c. Bargellini

Bargellini discloses a ball joint that connects a body (1) for a rechargeable battery to a plug (4). A seat (3) on the body (1) connects with a ball (9) connected to the plug (4) by a shank (5). Movement of the plug (4) in one direction is limited by the shank (5) engaging a slot in the seat (3) and in a perpendicular direction by diametrical pins on the ball (7) engaging grooves (17a, 17b) formed in the seat (3). Bargellini at lines 92-109; Fig. 9. Thus, because Bargellini discloses only a battery body (1) and a plug (4), Bargellini fails to teach or suggest first, second, and third connector heads where the first is moveable in a first plane and the second and third are moveable independently of each other in a second plane, as called for in claim 76. In addition, because Bargellini discloses a ball-socket arrangement, Bargellini fails to teach or suggest an intermediate portion having first and second ends with hinged connections that define substantially orthogonal axes of rotation for first and second connector heads, as called for in claim 82. Finally, because Bargellini discloses a ball-socket arrangement with limited motion by a shank between two positions in a slot and limited rotation by diametric pins, Bargellini fails to teach or suggest the three orthogonal axes of rotation called for in claim 89.

d. Hiroshi

Hiroshi discloses a plug (1) connected to a cable (9) where the plug (1) is capable of circumferential rotation to prevent fatigue on the cable (9). Hiroshi at Abstract. Thus, ***Hiroshi discloses a single degree-of-freedom between a plug and a cable.*** Because Hiroshi discloses only a single degree-of-freedom, Hiroshi at least fails to teach or suggest the first and second

orthogonal axis of rotation and planes called for in claims 76 and 82 and the three orthogonal axes of rotation in claim 89.

e. Stout

Stout discloses a connector adapter (16) for connecting a peripheral device (14) to a host (10). The connector adapter (16) has a plug portion (18) and a peripheral interface (20). The connector adapter (16) has a rotational inter-connection so that the adapter (16) permits the plug (18) to be positioned in a plurality of orientations, which allows reorientation of the plug 18 to accommodate different USB receptacle orientations, and allows a fixed position of the peripheral interface 21 and corresponding peripheral device, such as antenna (14) in FIG. 3. Stout at col. 4, line 63 to col. 5, line 57; Fig. 3. Stout also discloses that multiple rotational points could be implemented along the axis of the adapter (16). Thus, ***Stout discloses a connector with a single axis of rotation along the axis of the adapter.*** Because Stout discloses a single axis of rotation, Stout at least fails to teach or suggest the first and second orthogonal axis of rotation and planes called for in claims 76 and 82 and the three orthogonal axes of rotation in claim 89.

f. Hefner

Hefner discloses three socket members (19) connected by tubes (20 & 21) and bellows (22) to a central adapter head (13) so that the three socket members (19) can extend and collapse in one plane relative to the central adapter head (13). *See* Hefner at col. 4:20-24 and FIG. 6. Accordingly, Hefner fails to teach or suggest the first and second orthogonal axis of rotation and planes called for in claims 76 and 82 and the three orthogonal axes of rotation and planes called for in claim 89.

Based on the foregoing, these references (taken alone or in combination) fail to teach or suggest each claimed elements called for in Assignee's new claims 76-95. Therefore, new claims 76-95 are believed to be allowable.

D. Conclusion

Prior to this Reply, there were 4 independent claims and 33 total claims pending. With this amendment, there are now 4 independent claims and 29 total claims. Therefore, it is believed that the claim amendments do not add any additional independent claims or any additional total claims beyond which a fee has already been paid. Should any fees be required for any reason, the undersigned authorizes the Commissioner to charge any additional fees that may be required to Deposit Account No. 501922, referencing order no. 175-0002US.

To facilitate the resolution of any issues or questions presented by this paper, Assignee respectfully requests that the Examiner directly contact the undersigned by phone to further the discussion, reconsideration, and allowance of the claims.

Respectfully submitted,

Date: 21 November 2006

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